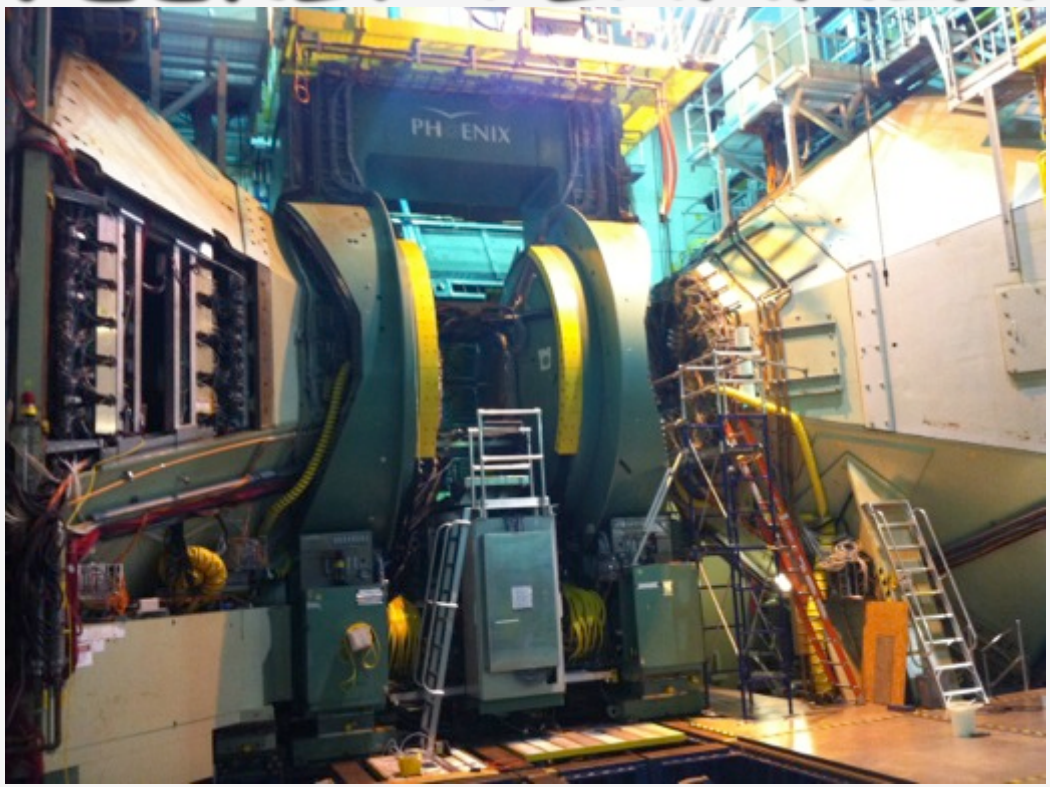
PHENIX

TECHNICAL SUPPORT 2014

PHENIX WEEKLY PLANNING



September 11, 2014

Don Lynch

PHENIX

This Week

TECHNICAL SUPPORT 2014

- Complete MPC North repairs
- Continue prep for MPC-Ex North installation
- Continue VTX/FVTX troubleshooting & repairs
- Continue FVTX cooling line and N2 distribution upgrades
- Continue assembly of MPC-Ex North (@ SB)
- Continue sPHENIX support
- FCal North disassembly

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TECHNICAL SUPPORT 2014

Next Week

- Finish prep for MPC-Ex North installation
- Continue VTX/FVTX troubleshooting & repairs
- Continue FVTX cooling line and N2 distribution upgrades
- Finish assembly of MPC-Ex North (@ SB)
- Begin MPC-Ex North Installation
- Continue sPHENIX support

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TECHNICAL SUPPORT 2014

2014 planned Technical Support & 2014 Shutdown

Procure & Fabricate parts for MPC-Ex North and South	**Done**
Set up Physics lab for FVTX/VTX east	**Done**
End of Run Party	**Done**
MuID Efficiency Measurement (Itaru, requires cooling water & isobutane)	**Done**
VTX /FVTX Cold/warm tests & evaluation, MPC-Ex Voltage tests	**Done**
Start of Shutdown Tasks (purge flammable gas, disassemble and stow shield wall, remove collars, move EC to AH, Move MMS south, etc.)	**Done**
Remove MMS east vertical lampshade	**Done**
Troubleshoot intermittent water leak in MMS	**Done**
Other Maint. In MMS	**Done**
Summer Sunday prep AH, tours and restore AH	**Done**
Install scaffolding in Sta 1 South	**Done**
Remove MPC-Ex prototype	**Done**
MuTr Sta 1 South troubleshooting and repairs	**Done**
Remove scaffolding from sta 1 south, Move CM South	**Done**
Install scaffolding in Sta 1 North	**Done**
Open MMN hatch, MuTr North Sta 2 & 3 maintenance and repairs	7/9-9/30/2014
Remove FVTX/VTX East & West to PHYSICS, repair and reinstall	7/14 – 10/15/2014
VTX/FVTX Upgrade cooling lines, chiller preventive maintenance	7/21-10/6/2014
Maint. & Repairs for MPC South, BBC South	7/28-8/1/2014
Assemble & test MPC-Ex North, ready for installation	8/1-9/15/2014
MuTr Sta 1 & Sta. North troubleshooting and repairs	8/11-9/15/2014
Electronic Cooling Water High Temp Alarm	**8/11-9/30/2014**
Prep MPC-Ex North installation area	8/18-9/15/2014
MPC North-remove damaged crystals, repair as necessary, re-install	8/18-9/15/2014
F/VTX Cooling line upgrades teflon to stainless	8/25-10/31/2014
F/VTX N2 supply manifold upgrade	8/25-10/31/2014
F/VTX Chiller preventative maintenance	8/25-10/31/2014
Reinstall MMS east vertical lampshade	9/2-9/15/2014
Install new MPC-Ex North, thoroughly test before moving CM north	9/8-10/10/2014
Assemble & test MPC-Ex South, ready for installation	9/2-10/10/2014

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TECHNICAL SUPPORT 2014

2014 planned Technical Support & 2014 Shutdown (cont'd)

Remove Sta 1 N scaffolds, Move CM North, Install scaffolding in Sta 1 S	10/10- 10/13/2014
Install MPC-Ex South	10/14-10/31/2014
Reinstall, reconnect, re-survey and re-commission VTX/FVTX	10/16-11/26/2014
sPHENIX Support	on-going
End of Shutdown Tasks (Move MS north, roll in EC , install collars, remove 10 ton cart, plates and manlifts, build shield wall, etc.)	12/1-12/12/2014
DC East & West maintenance & repairs	????
Pink/White/Blue Sheets	12/1-12/19/2014
End of Shutdown Party	????
Start Flammable gas flow	????
Close shield wall, install radiation interlocks and prepare for run 14	12/31/2014
Start run 15	1/2/2015

TECHNICAL SUPPORT 2014

Work Permits for 2014 Shutdown

- Start of Shutdown - Done
- VTX/FVTX East - Done
- MPC-Ex - Done
- MuTr Sta 1 N & S - Done (scaffold agreement done)
- MuTr North station 2/3 - Done
- MuTr South station 2/3 & MMS South Water leak - Done
- MPC North - Done
- DC East/West – need in **November?**
- End of Shutdown – need in December

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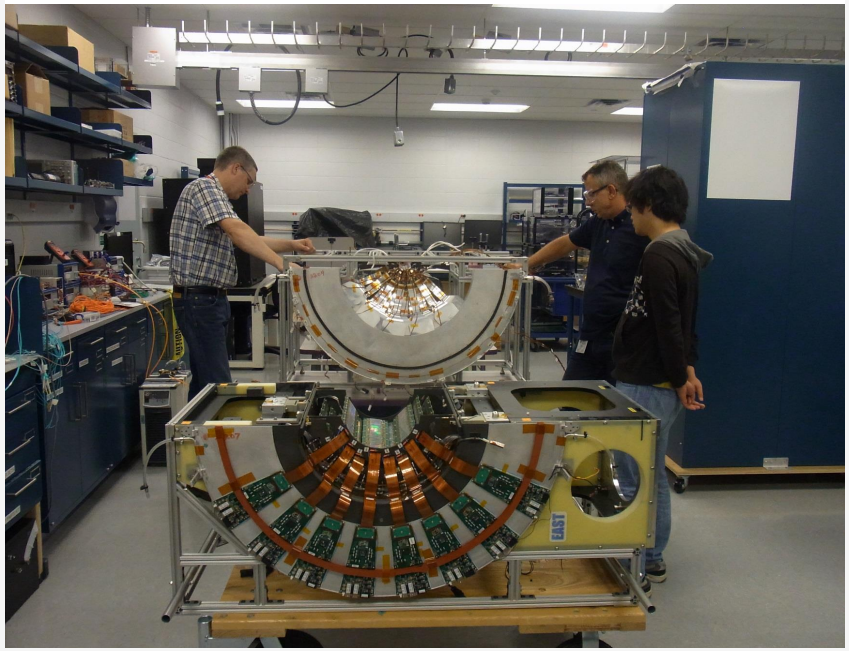
TECHNICAL SUPPORT 2014



VTX Status and Plan

VTX-Stripixel

- Fix HV issue for the 5 ladders

- Matt (ORNL) updated bench test program to investigate CellID issue observed in few RCCs at IR
  - plots for CellID from each chip
  - more work need to be done to investigate CellID

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TECHNICAL SUPPORT 2014

VTX Pixels

Plan before Run-15 (Physics Bld.)

- Re-assemble EAST barrel (2 days).
  - Mate with Strip.
  - Attach BW, reconnect of HIROSE connector, taping
- Electrical test and bias current measurement for all ladders (E/W) (1 week).
- Man Power
  - Takayuki Sumita (RIKEN)
  - Taebong Moon (Yonsei)
  - Hiroshi Nakagomi (Tsukuba)

Per Rachid,

Expect to have VTX rebuilt and ready for installation by Oct.1

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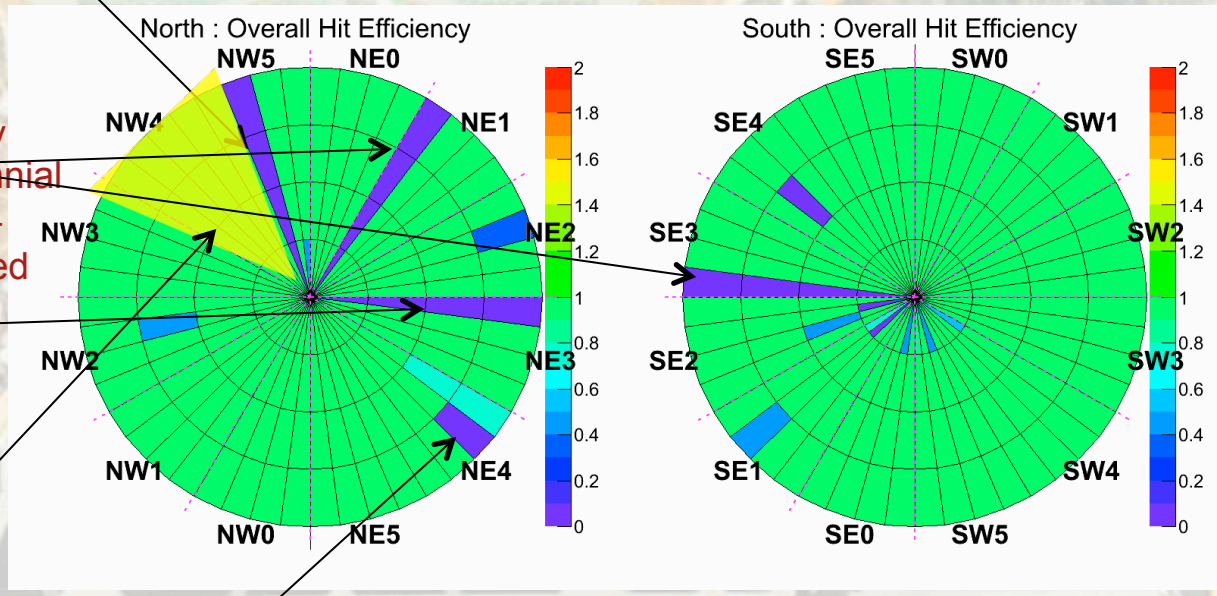
TECHNICAL SUPPORT 2014

FVTX Repairs – August 2014

(1) NE5 replaced (twice). Pulled ROC off, found damaged LDO and fixed. One wedge did not read out. When I tried to reconnect, hirose connector peeled off. Replaced with a new ROC and functional

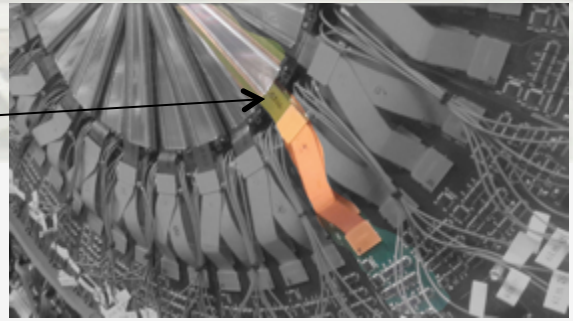
(4) NW4 lost SC sync capability between IR and Physics. Perennial problem with moving detector – something usually gets damaged



(2) NE1, SE3 problem not reproduced in Physics (see next)

(3) NE3 HV chain has problems maintaining bias in IR. Not an issue in Physics

(5) NE4 st. 3 wedge did not read out or hold HV. Will be replaced because easy access



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TECHNICAL SUPPORT 2014

From: Melynda:

FVTX should be operating at the 98-99% level in the IR.
(Plan to replace one wedge sometime this month.)

One wedge not functioning because of HV, occasional chips here and there do not function.

Expect to be available to install into IR whenever requested, don't *expect* to have to do any additional work in the IR

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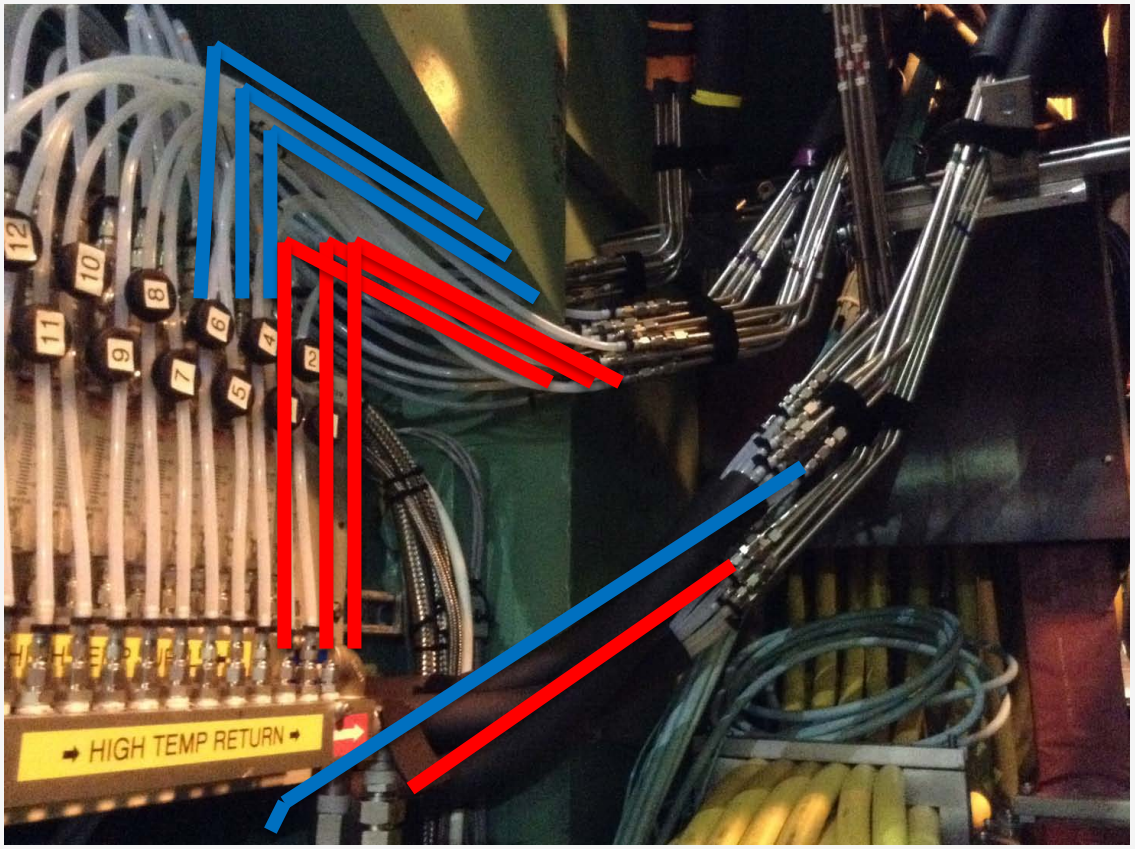
TECHNICAL SUPPORT 2014

Top manifold has 13 Supply and 13 return lines. Both North and south need to be replaced.

Bottom manifold has 9 Supply and 9 Return lines Both North and South need to be replaced

Current labeling on tubes needs to be maintained and copied to new lines

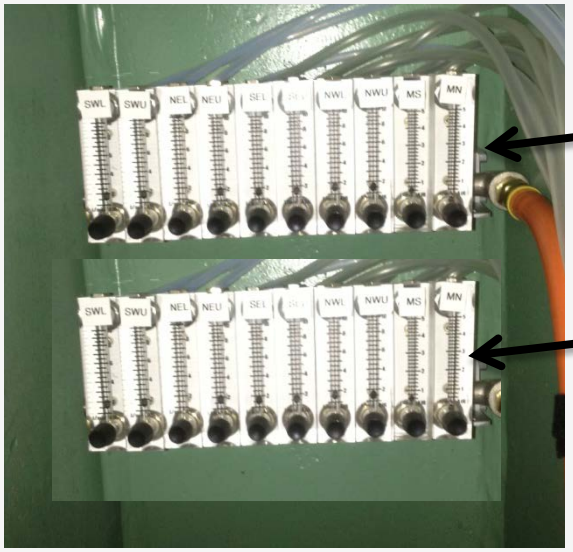


Bends need to be done carefully so not to restrict flow. Swage elbows can also be used for sharp bends

Replace All Teflon lines with ¼”ID 316 thin walled Stainless
McMaster
Coil:89995K82
Or Rigid with Min ID 0.21” (89995K288)

TECHNICAL SUPPORT 2014

VTX/FVTX N2 Supply Manifold.
Located on south side of central magnet



Original N2 Distribution Panel

New N2 Distribution Panel
- 10 flowmeters
- 0-10lpm
- Output ¼”I.D barb
- Leave about 10” space between manifolds.

Shutdown work on chillers to help with reliability

1. Change pump seals on chillers 1 and 3
   - Chris replaced chiller 2's pump seal. There was some trial and error to get it right.
   - We have these parts
2. Replace both control solenoids and Filter on chiller 1 and 2
   - We have these parts
   - BNL HVAC guys. Schedule for Beginning of OCT
3. General annual maintenance on all 3 units listed in manual
   - HVAC guys/ Phenix Tech

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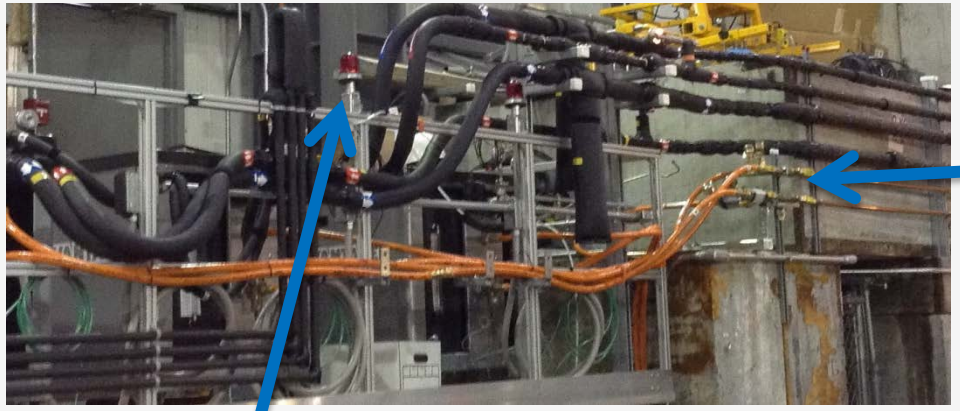
TECHNICAL SUPPORT 2014

Modifications to Water lines to make switchover less time consuming.

Permanently connect water lines to all 3 chiller through a new 3 channel manifold. Currently the manifold only has 2 channels. It needs to have a 3rd channel added for the spare chiller. We should also replace the flowmeter s with ones that have a smaller scale.



Manifold Location

Instrument spare chiller with alarms similar to other two chillers.

1. Need to add float switch to lid. (I have parts)
2. A third strobe and audible alarm added to rail. (Frank did this last time)

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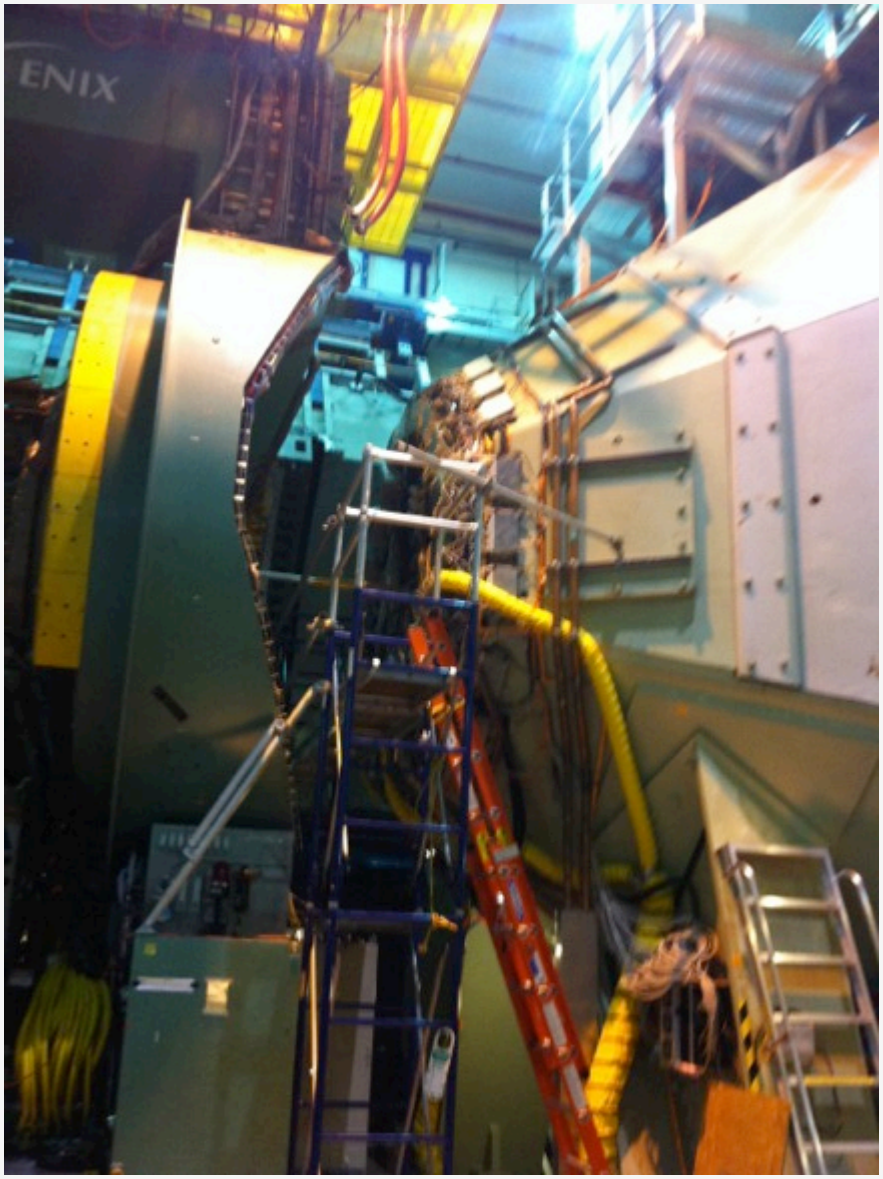
TECHNICAL SUPPORT 2014



Scaffolding in north station 1

MPC-Ex North Prep is underway

From the MPC-Ex group:

Schedule

- North
  - 9/15: Finish testing each layer
  - 9/15 – 9/22: Burn-in of the fully assembled North
  - 9/22: Delivery to BNL
- South
  - 9/22: Begin testing/assembling half of the South
  - 10/?: Delivery

From the MPC-Ex group:

Assembly

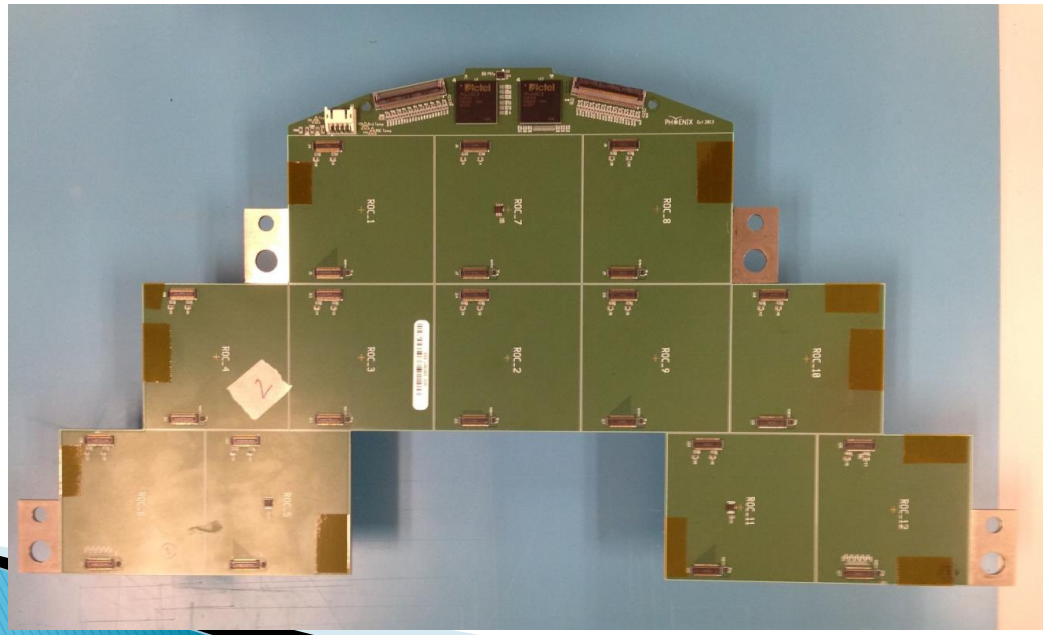
- Frank Toldo came by SBU to go over details of assembly
- We began assembling the Top North
- Assembling “upside down” so that the micromodules are facing upwards

Stacking issue

- Unfortunately, some carrier boards are peeling away from the W on the corners
- Have to make sure modules don't touch W from next layer

Stacking issue – solution

- Kapton tape around the corners to keep them down



Still needed for assembly

- Power cables
  - In contact with Steve Boose
- Readout cables
  - 2m cables are in hand
  - 40cm cables are on their way
  - “extension” boards are on their way
- Cooling flutes
  - Tom Hemmick is in contact with Rich Ruggerio/Mike Lenz

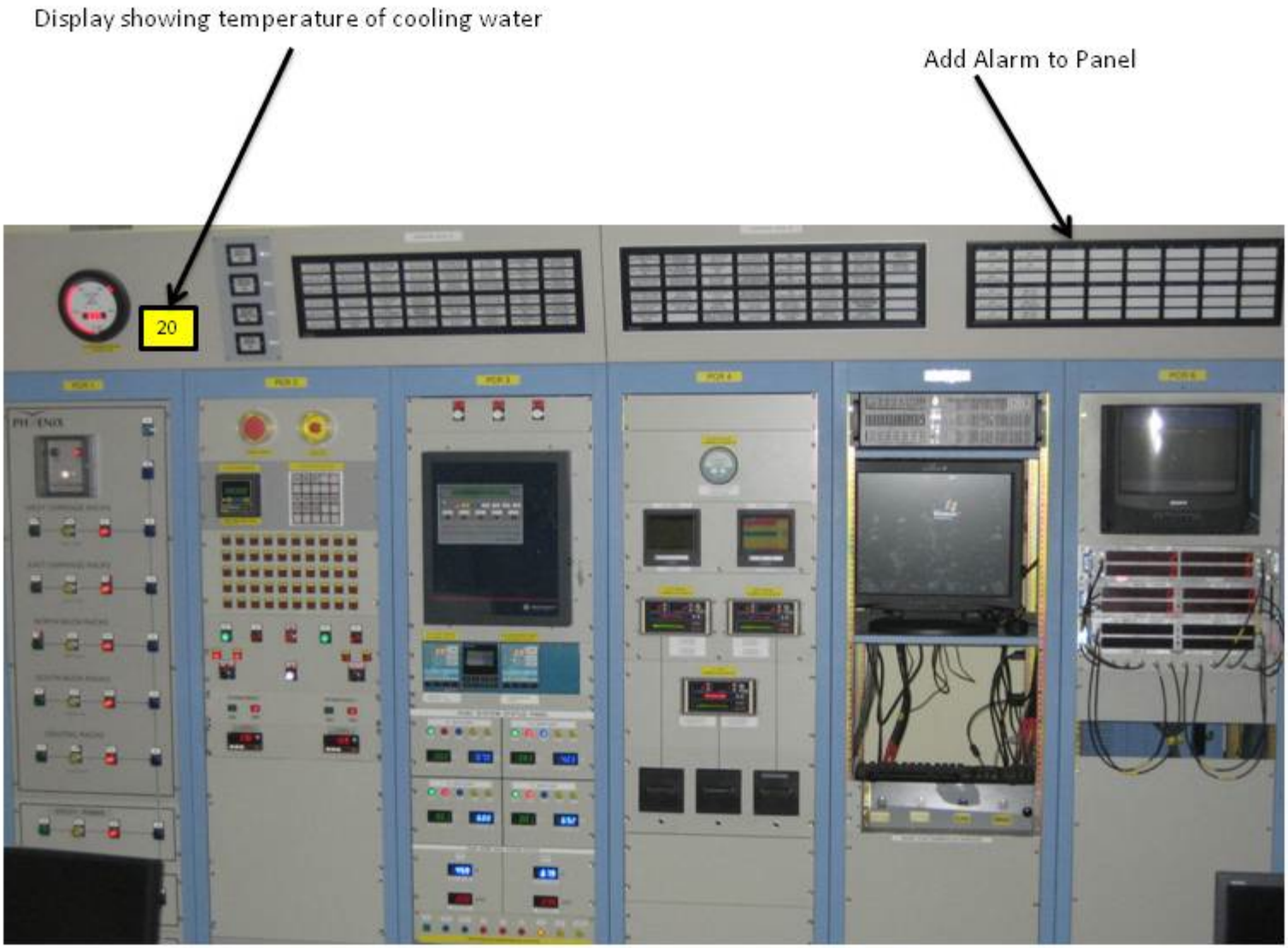
Burn-in

- Issue is readout
  - Current readout not capable
    - Not enough prototype FEMs
    - Full CB readout is not reliable
- FEM readout is currently being worked on
  - Mazsi: testing modified FEM rev0
  - Chuck: data transfer to DCM-II
  - Andrei: CB readout (close as of last week)
- Will be a key point in the thurs MPC-EX meeting

Where we are with the South

- As soon as North is delivered we will begin assembling the South
- Have 118 (out of 192) modules ready for the South
- Next shipment of Readout Cards (100) coming at the end of September
  - Will be ready for assembly mid-late October
  - All other pieces of South are available (CBs, sensors, etc…)

Electronics Cooling Water High Temperature Alarm



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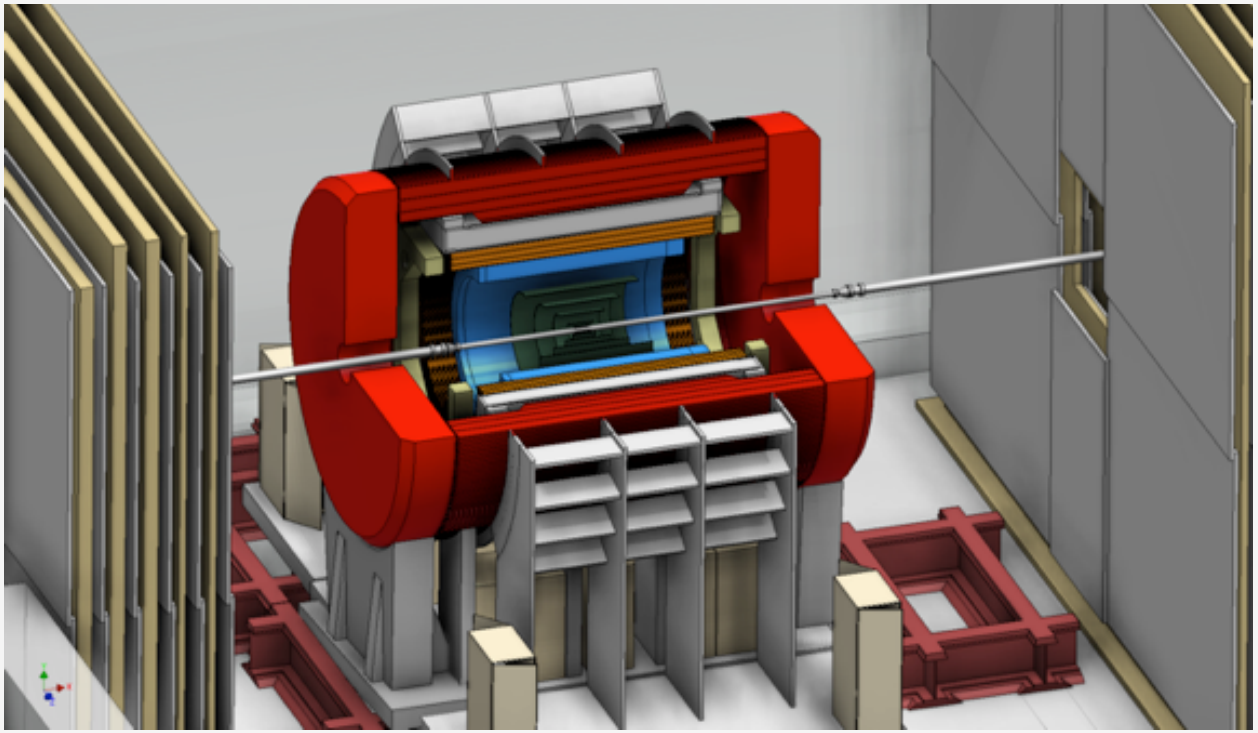
TECHNICAL SUPPORT 2014

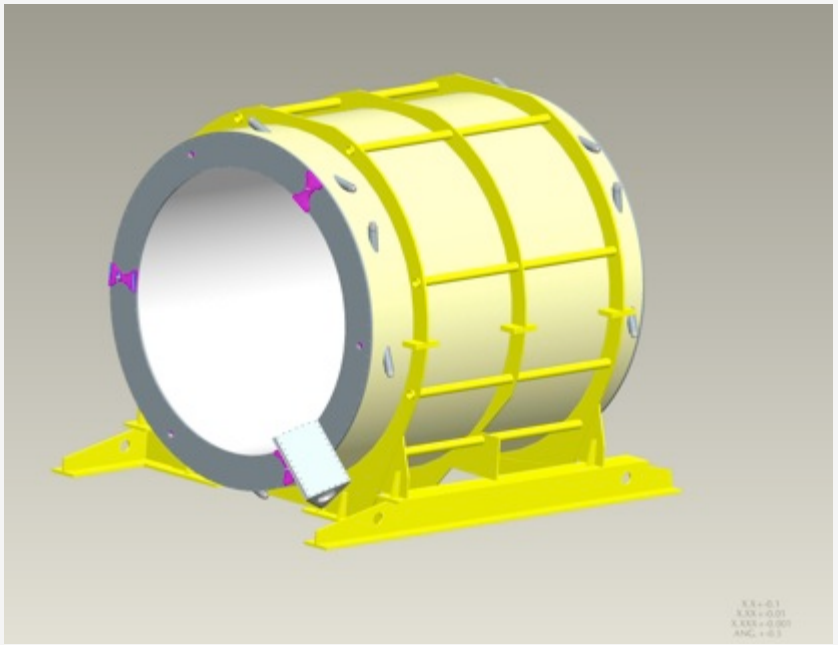
sPHENIX Update



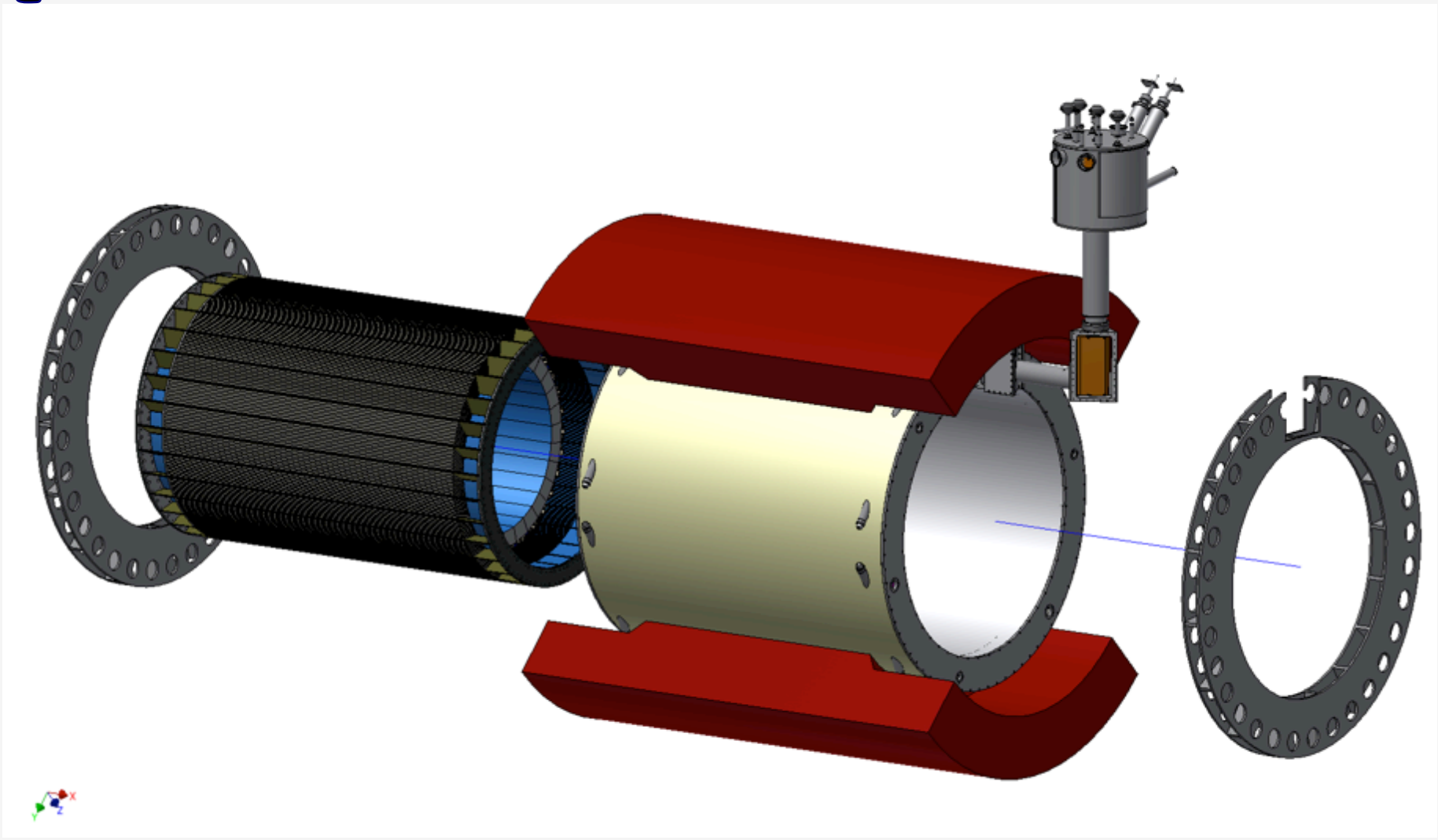
TECHNICAL SUPPORT 2014

sPHENIX Update:

- Magnet shipping delayed (shipping fixture in CS for modification)
- Plan to receive and set up for test and tested by 6/30/15
- Plan to build stack modification in time to use for test



Internal Support Concept



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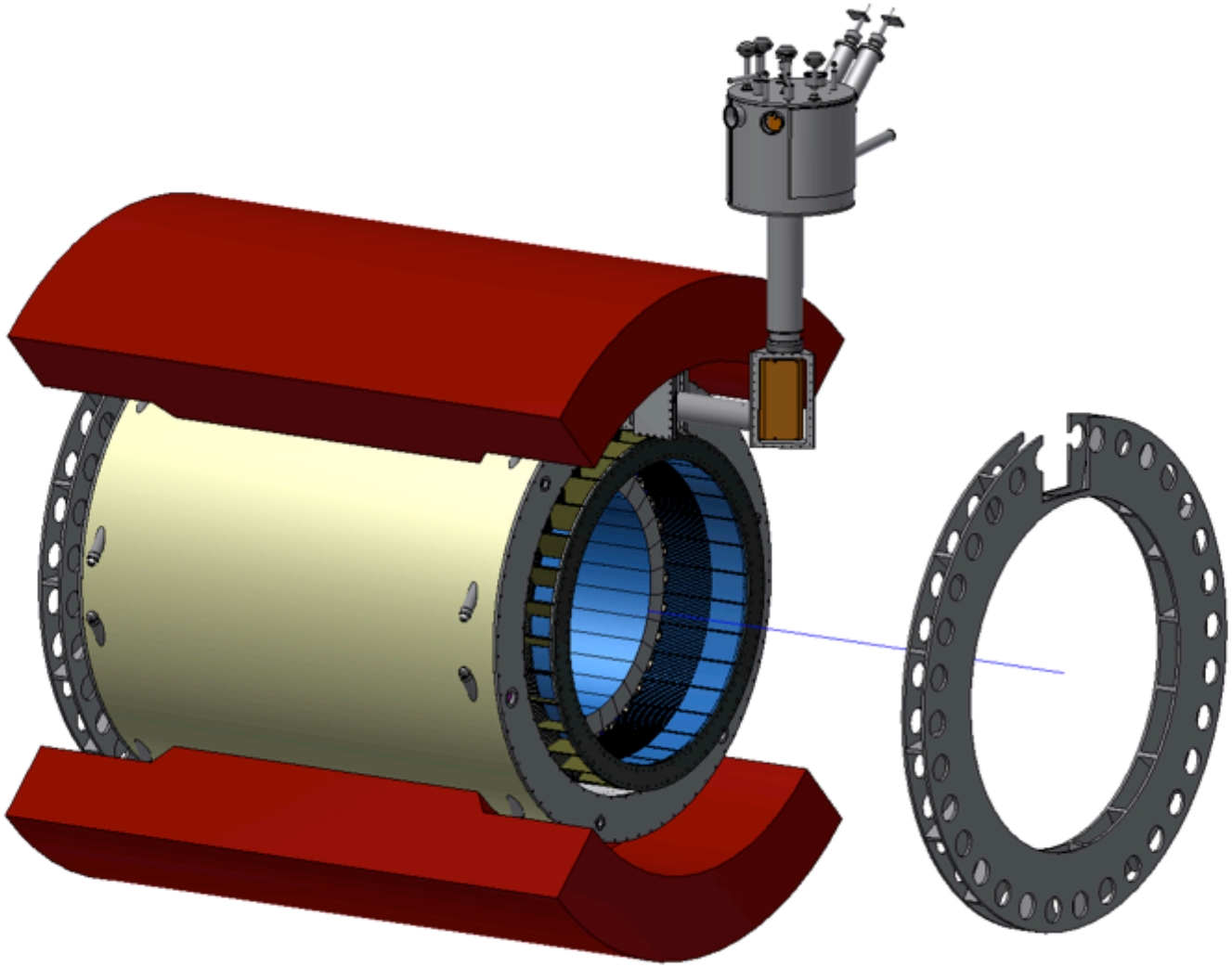

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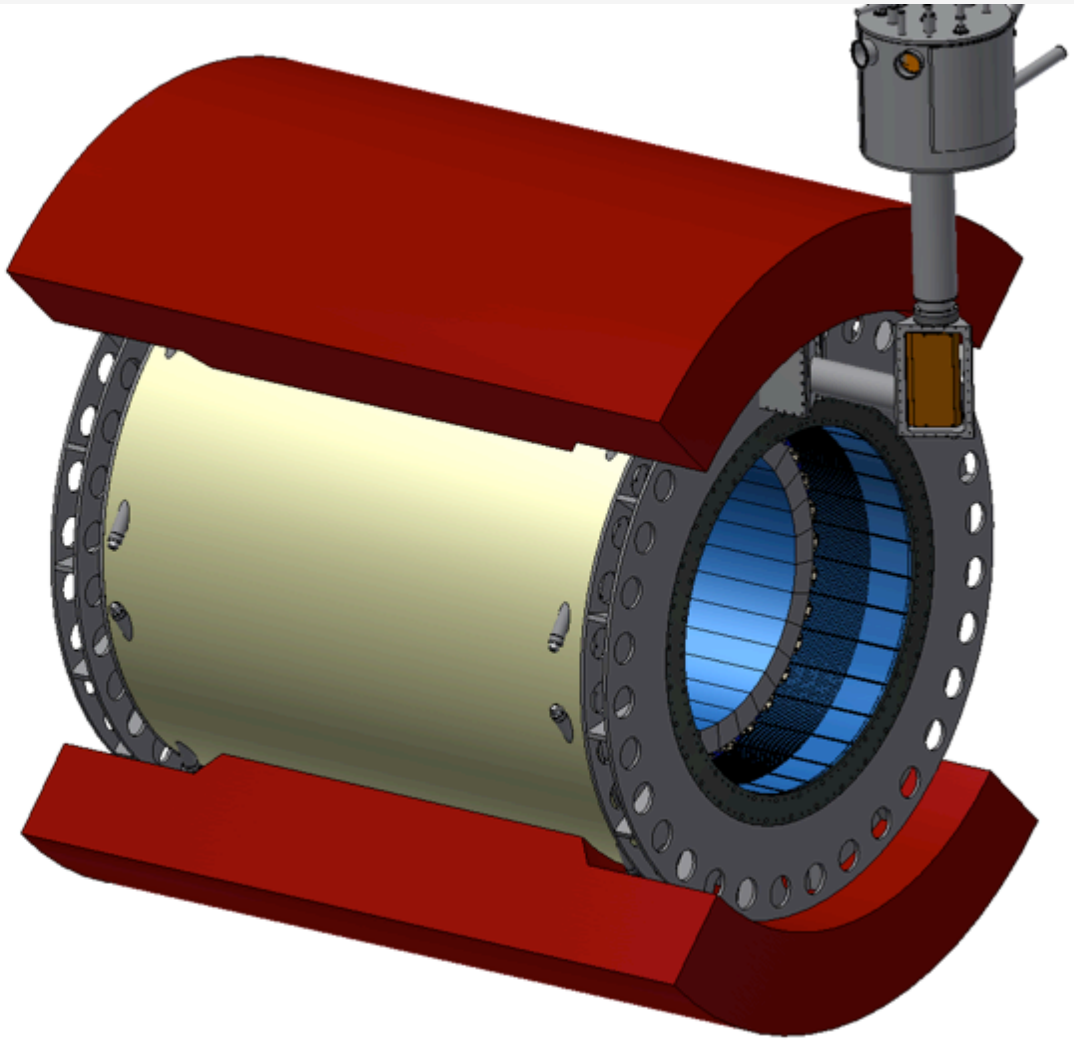
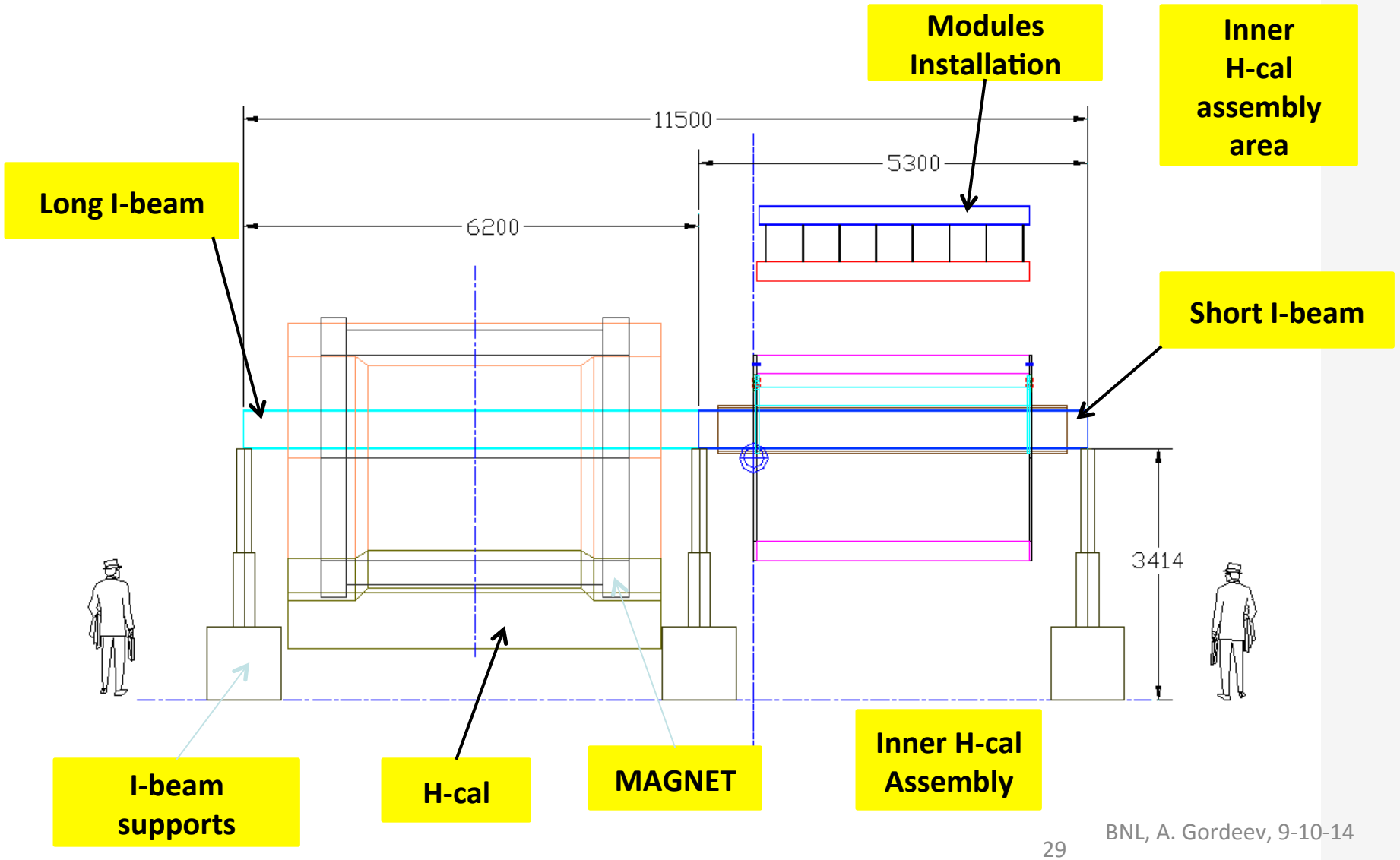


sPHENIX INNER H-cal ASSEMBLY AND INSTALLATION

PROPOSAL. COMPLETE ASSEMLY AND INSTALLATION SCENE



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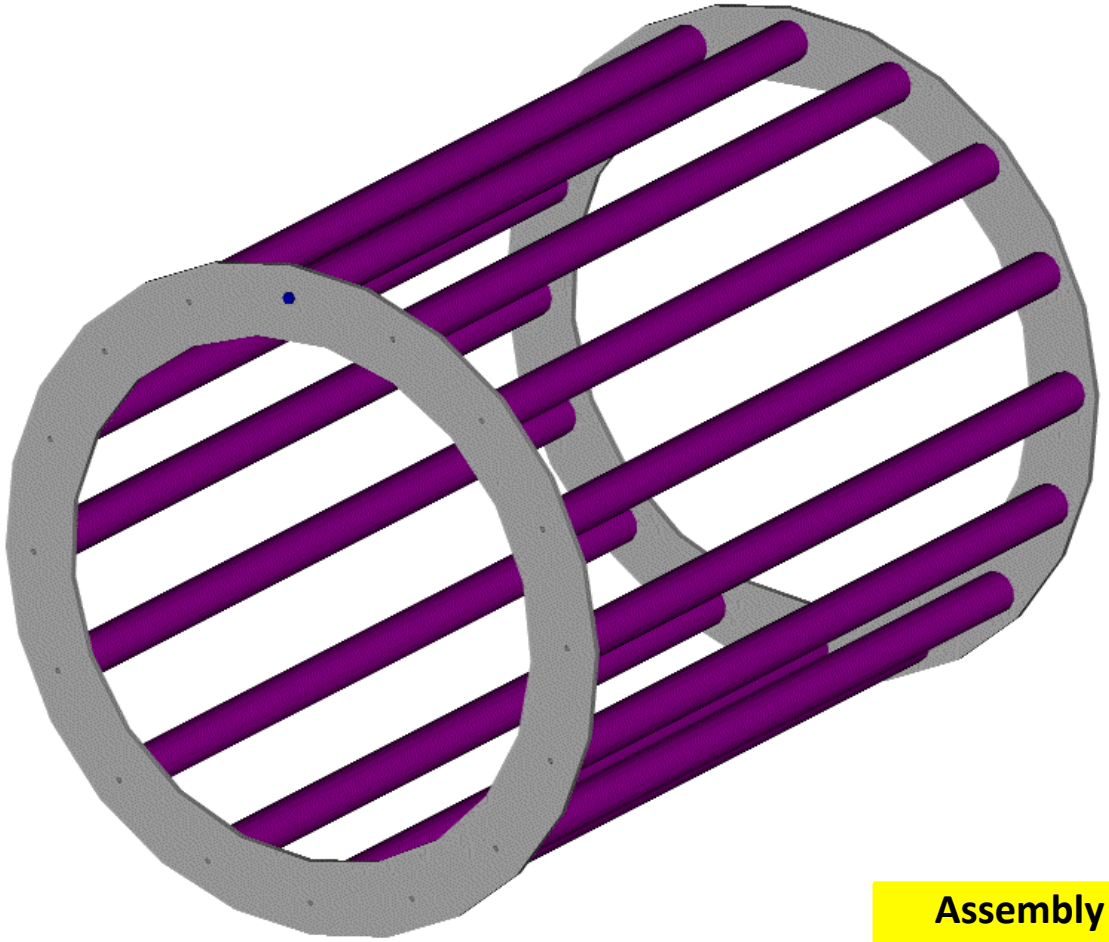
TECHNICAL SUPPORT 2014

sPHENIX INNER H-cal ASSEMBLY AND INSTALLATION

PROPOSAL. Tooling . Assembly Cage



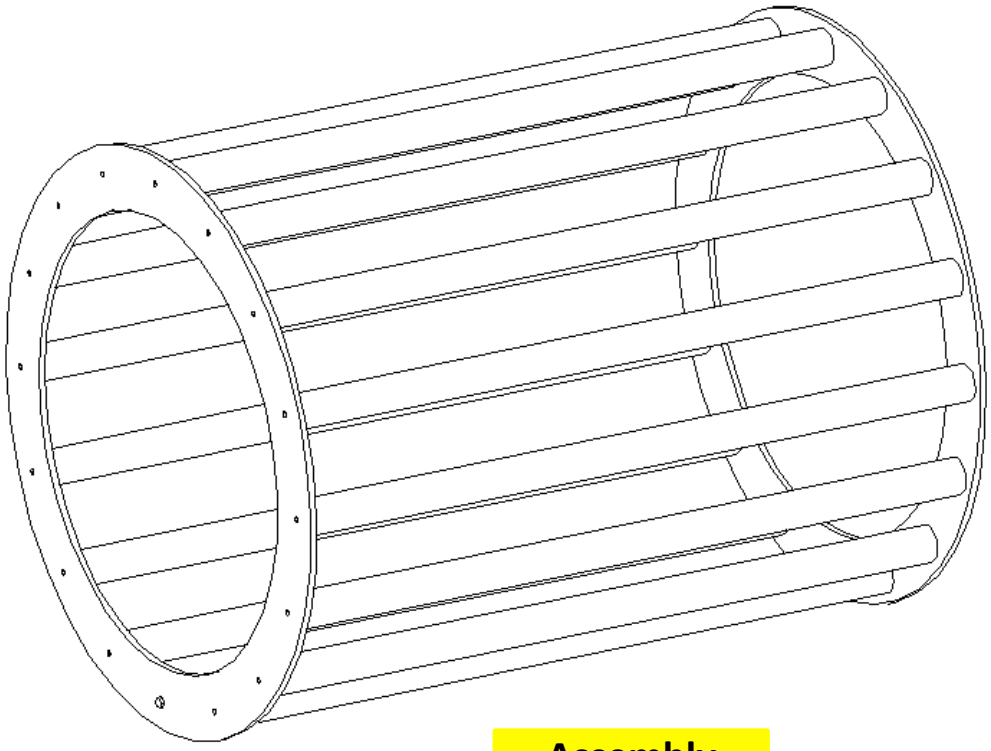
Assembly cage

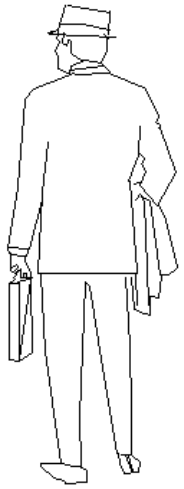
sPHENIX INNER H-cal ASSEMBLY AND INSTALLATION

PROPOSAL. Tooling . Assembly Cage

TECHNICAL SUPPORT 2014

2 Flanges with
Outer R = 1400mm;
Inner R = 1135mm:
Separated by 3850mm
Connected together by
16 removable rods.



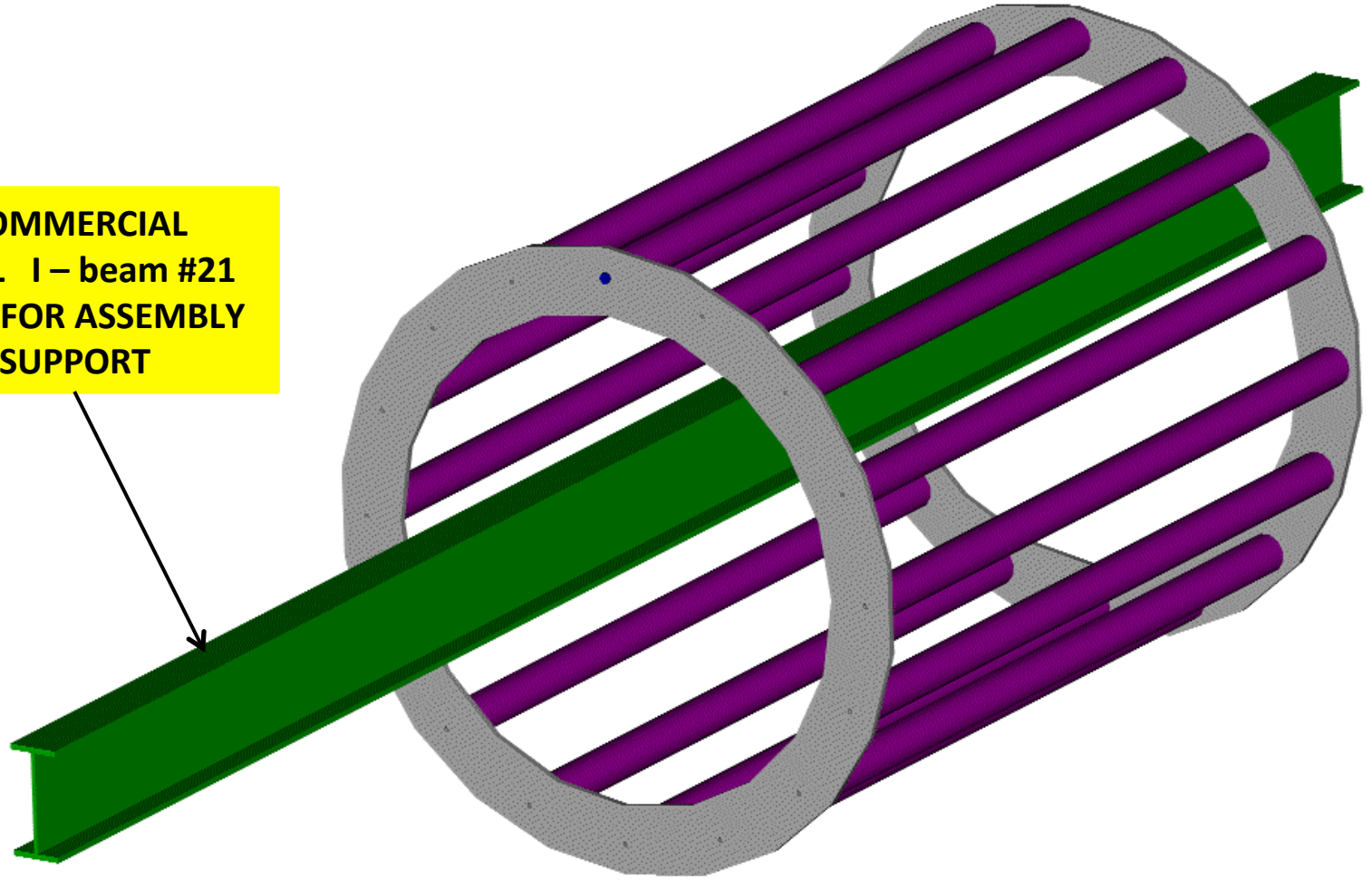


Assembly Cage

sPHENIX INNER H-cal ASSEMBLY AND INSTALLATION

PROPOSAL. Tooling . Assembly Cage + I-beam

TECHNICAL REPORT 2014



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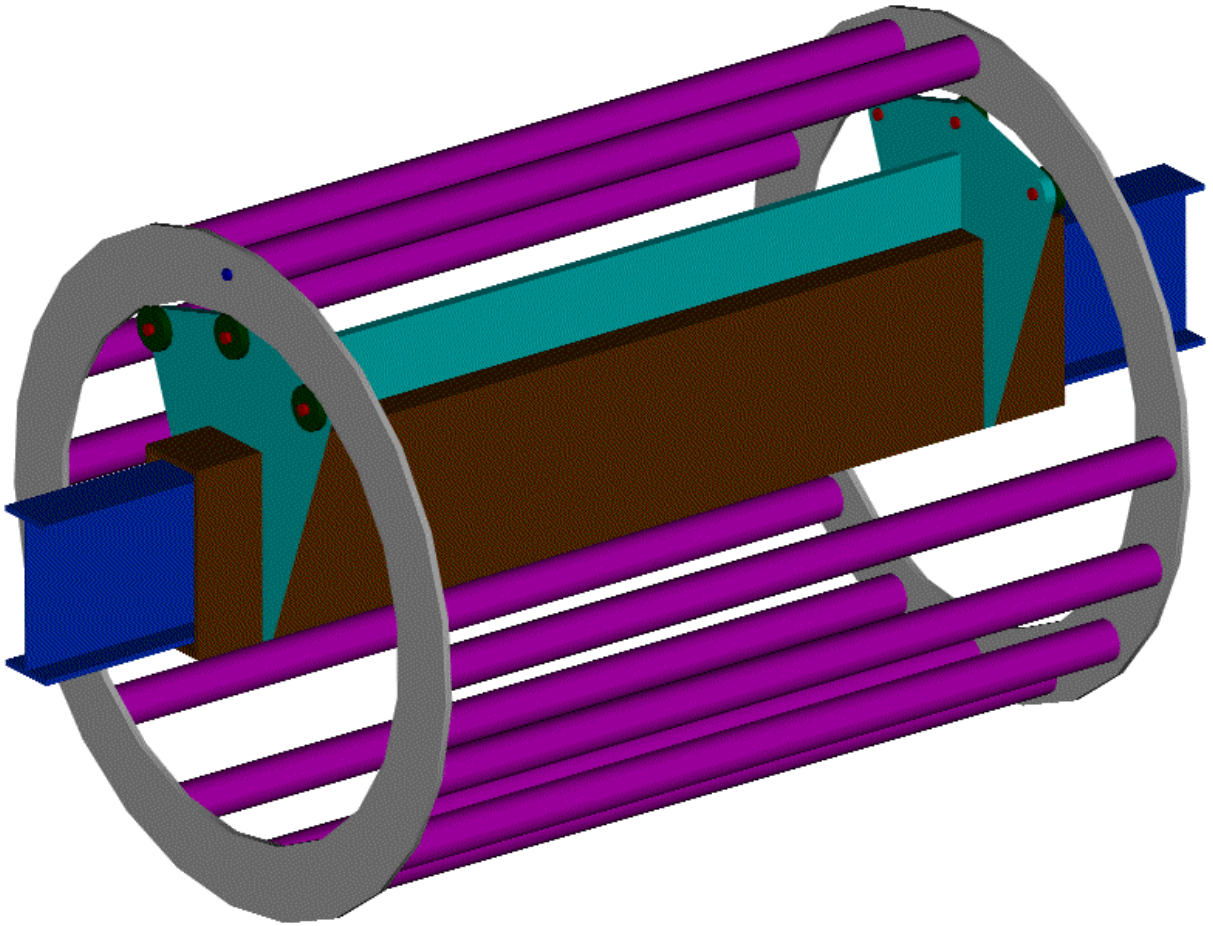
sPHENIX INNER H-cal ASSEMBLY AND INSTALLATION

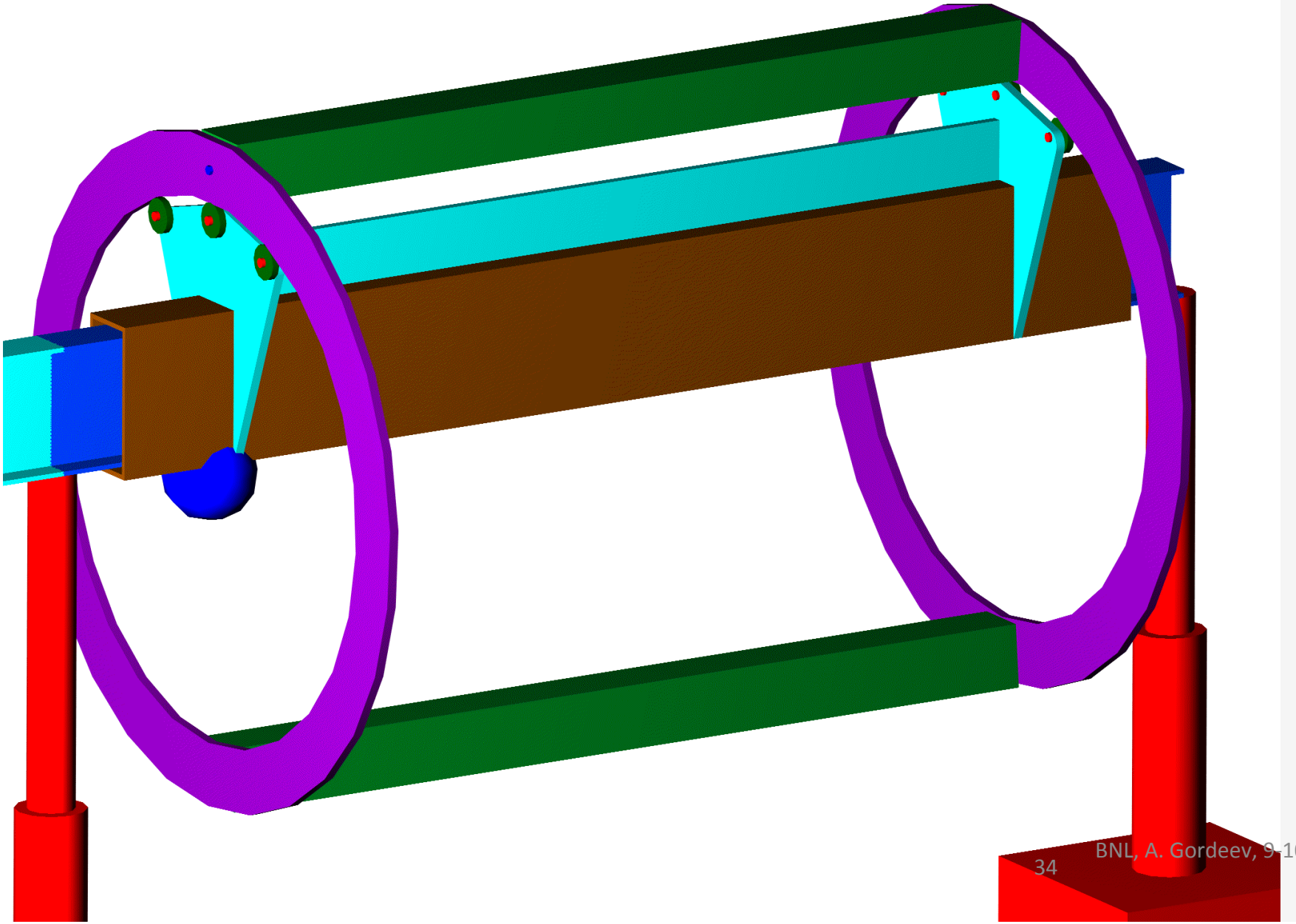
PROPOSAL. Tooling . CAGE, Transportation cart and support beam

TECHNICAL SUPPORT 2014



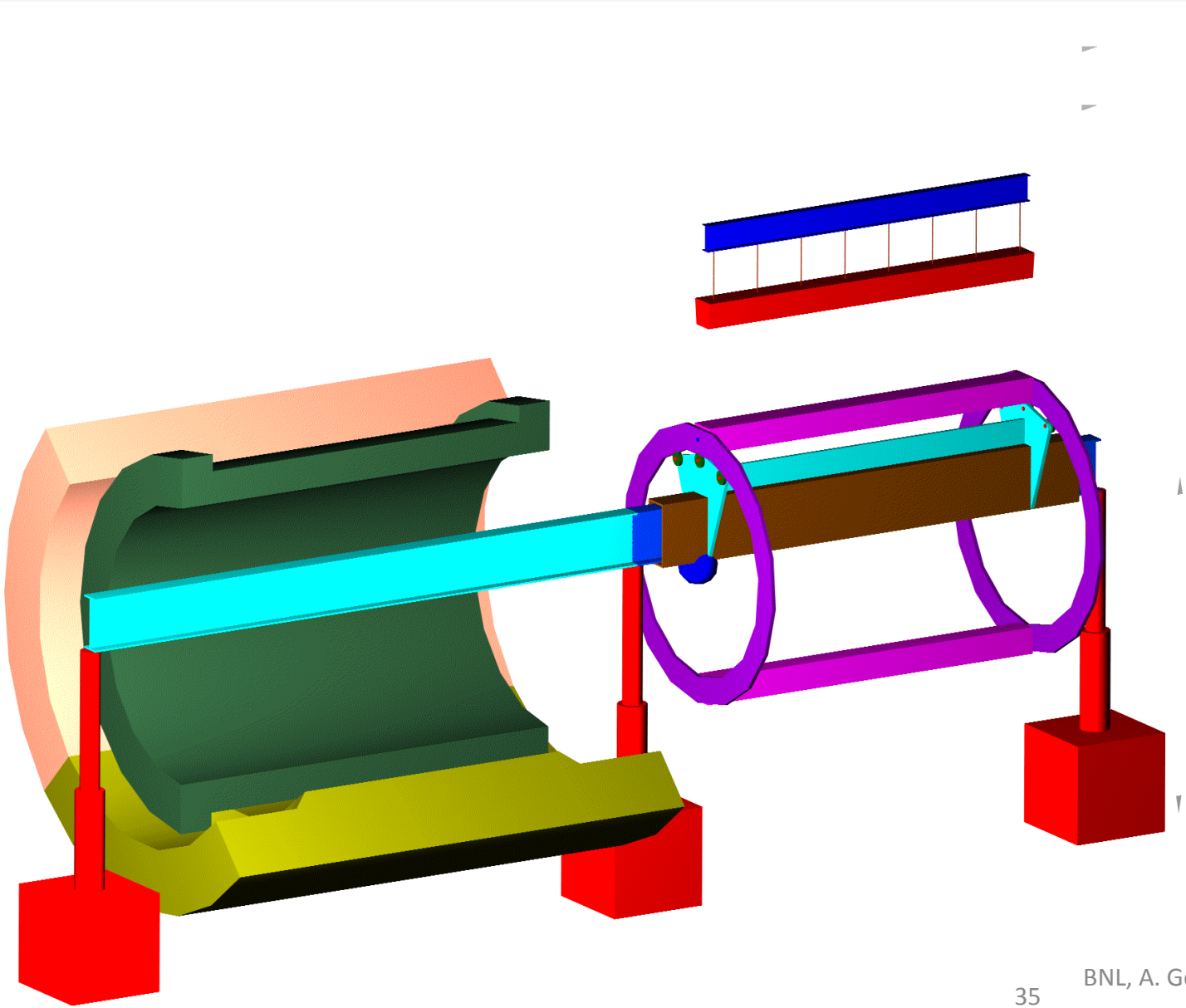
sPHENIX INNER H-cal ASSEMBLY AND INSTALLATION

PROPOSAL. Tooling . Transportation cart. MODULE INSTALLATION PROCEDURE



sPHENIX INNER H-cal ASSEMBLY AND INSTALLATION

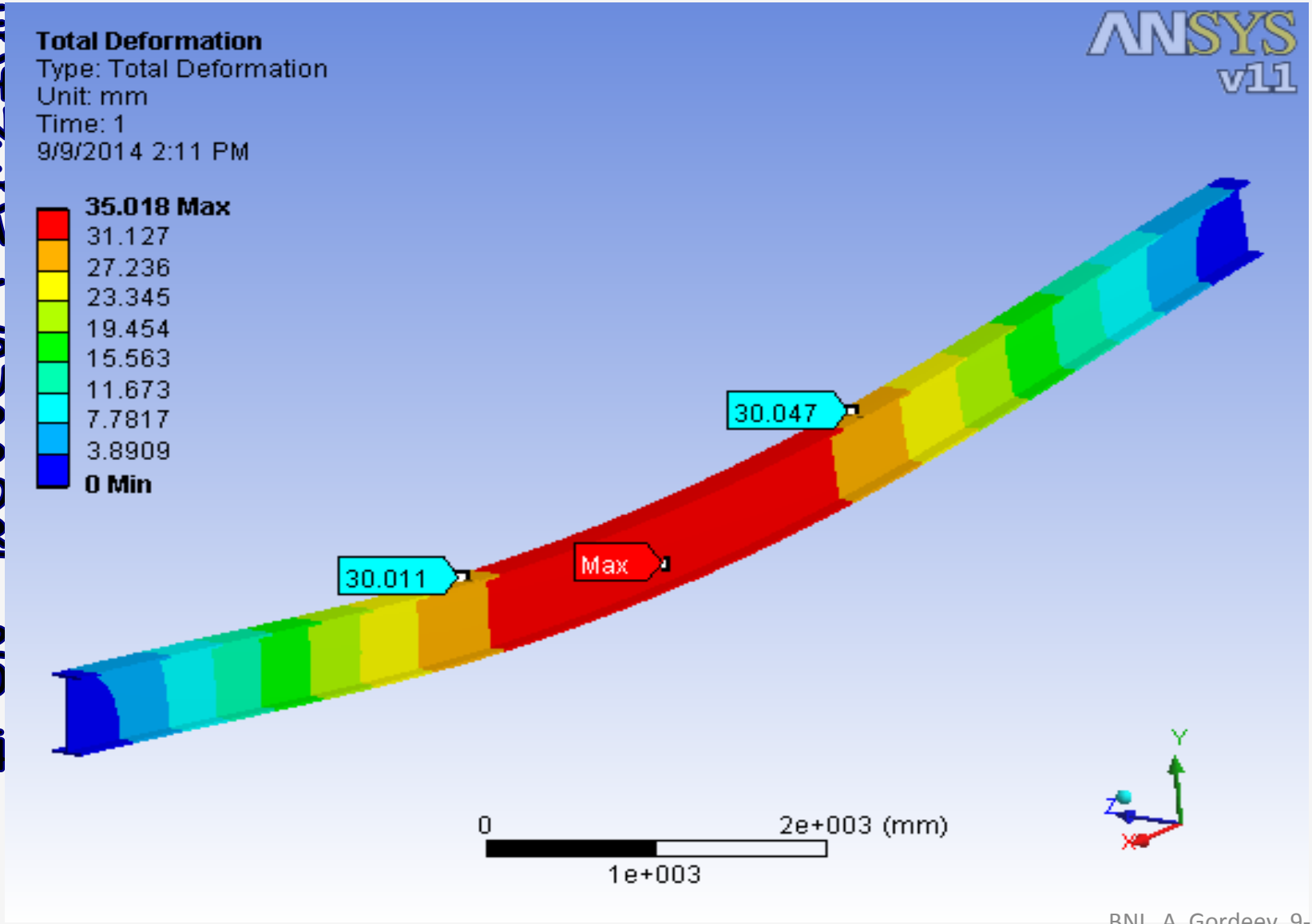
PROPOSAL. Tooling . COMPLETE ASSEMLY AND INSTALLATION SCHEME



sPHENIX INNER H-cal ASSEMBLY AND INSTALLATION

PROPOSAL. Tooling . SUPPORT BEAM STRUCTURAL ANALYSES. DEFORMATION

TECHNICAL SUPPORT 2014



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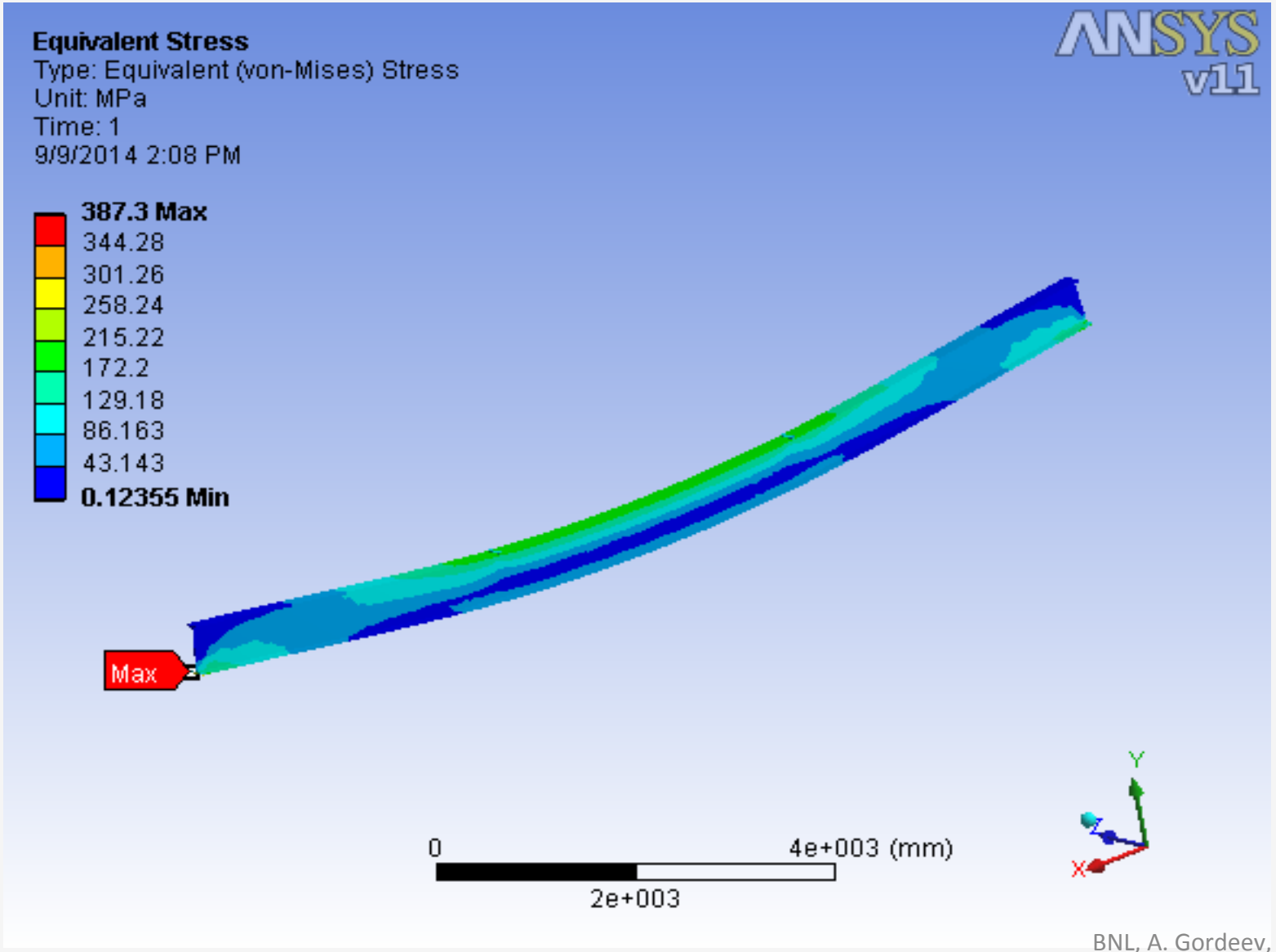
sPHENIX INNER H-cal ASSEMBLY AND INSTALLATION

PROPOSAL. Tooling . SUPPORT BEAM STRUCTURAL ANALYSES. STRESS

TECHNICAL SUPPORT 2014



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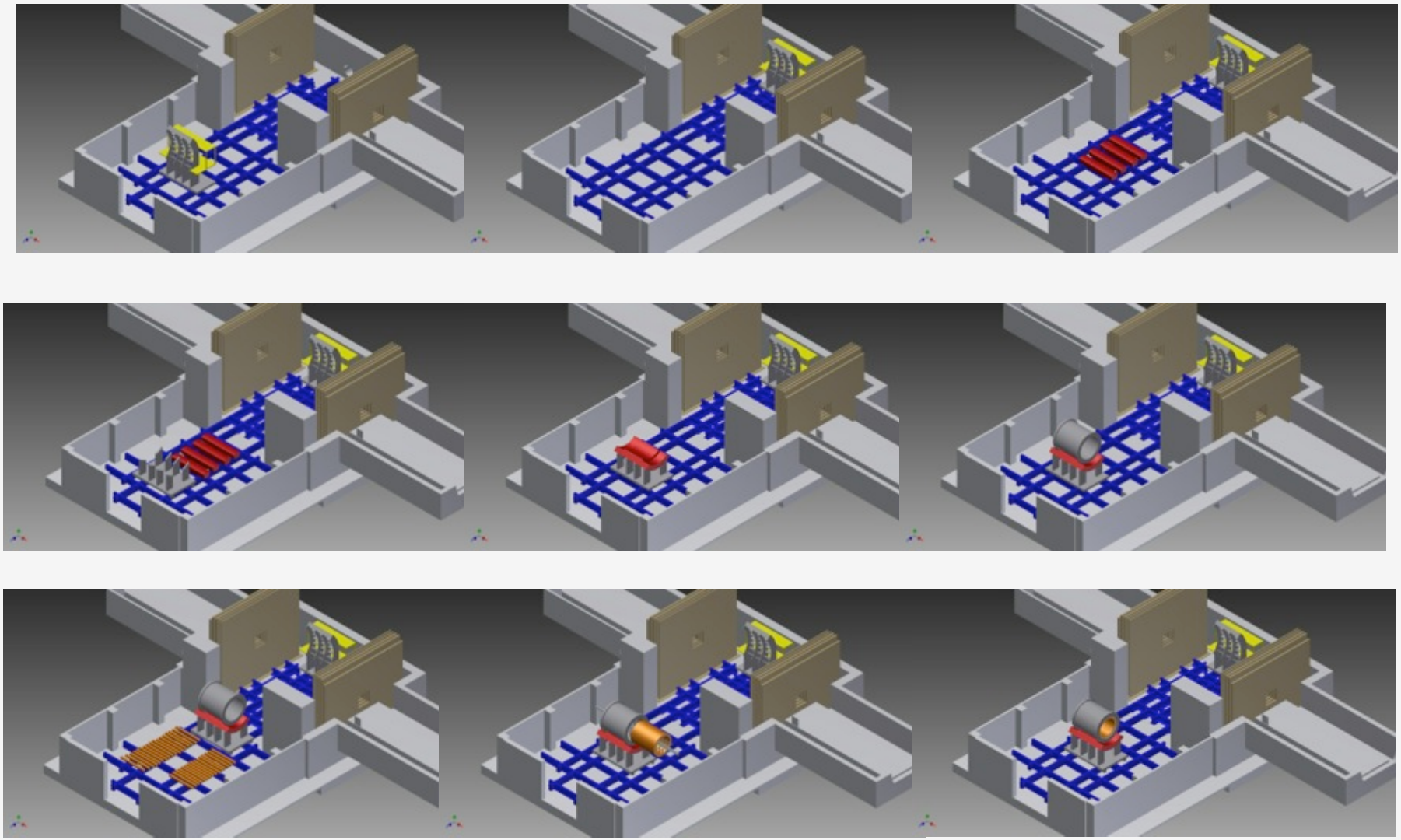
Global assembly Plan

TECHNICAL SUPPORT 2014



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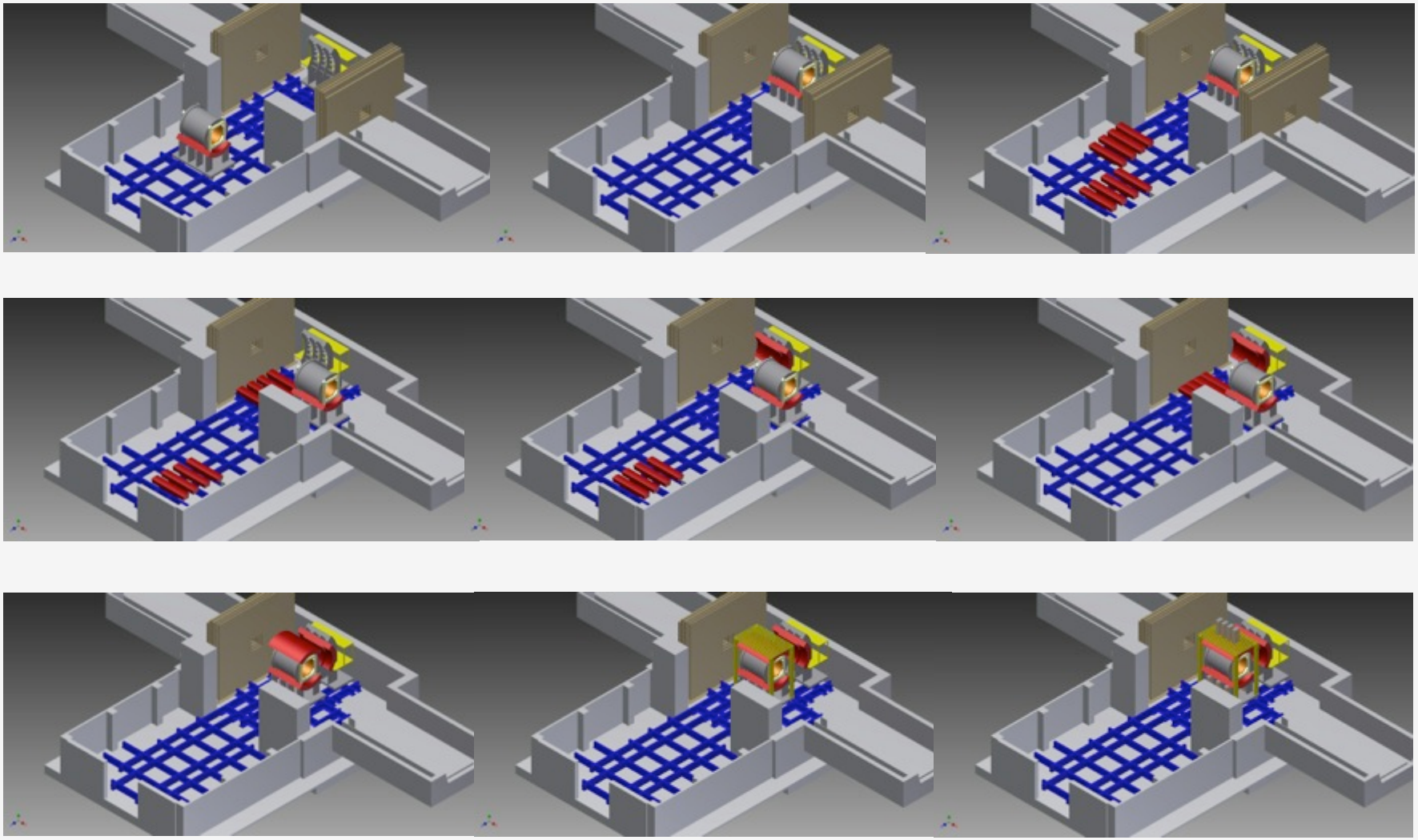
Global assembly Plan

TECHNICAL SUPPORT 2014



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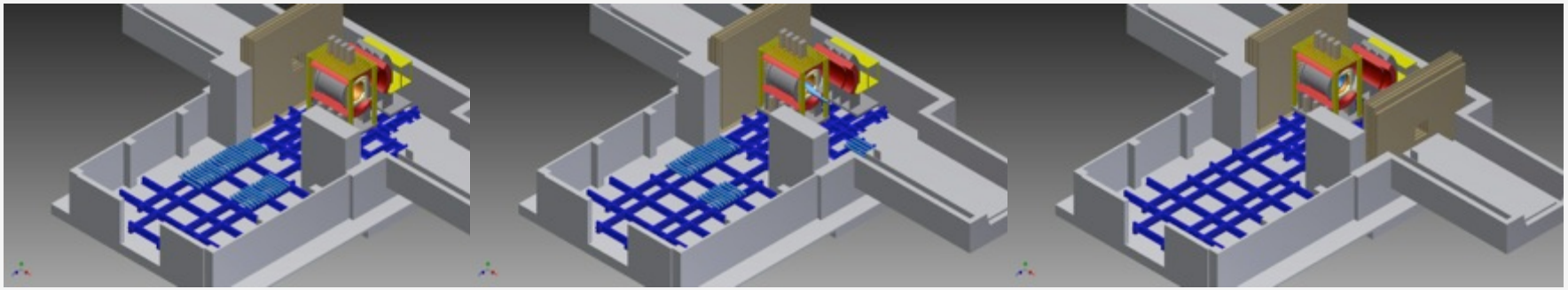
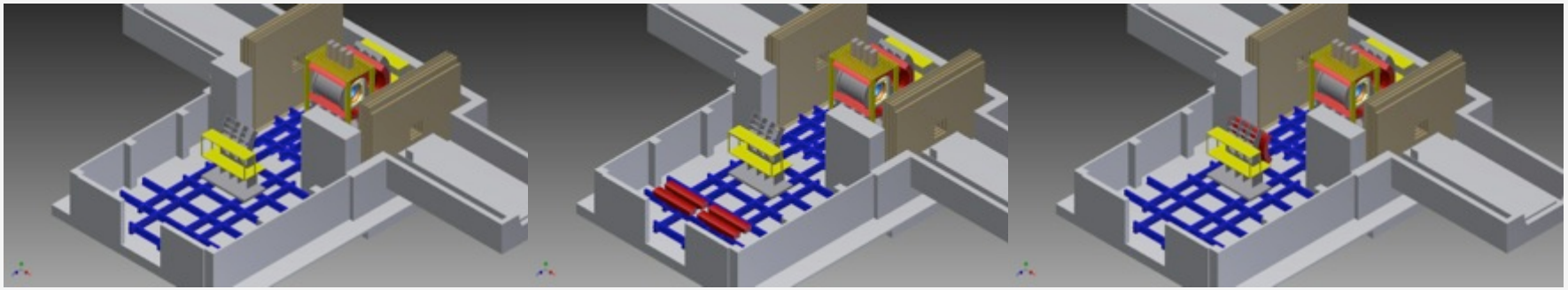
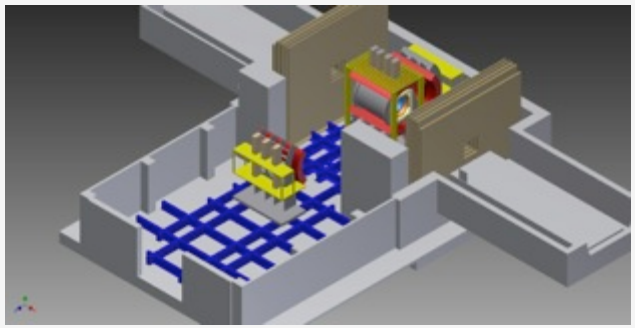
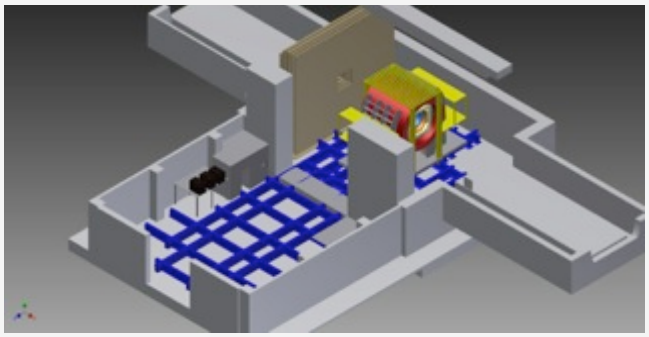
TECHNICAL SUPPORT 2014

Global assembly Plan









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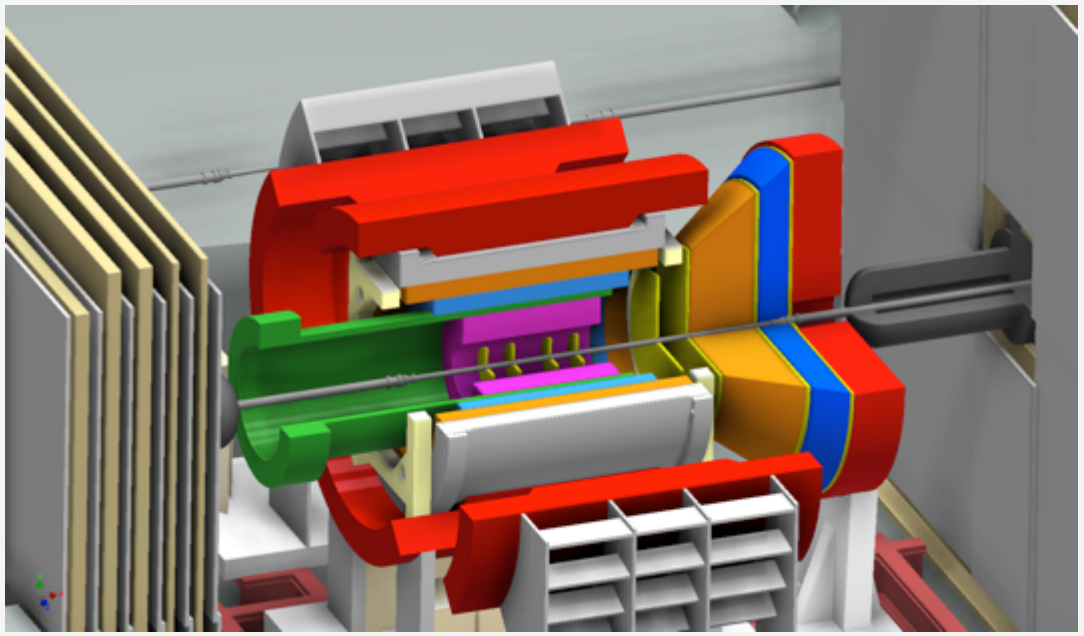
TECHNICAL SUPPORT 2014

ePHENIX



TECHNICAL SUPPORT 2014

From Ray Karol:

1. A reminder that BNL has given us until **9/30/14** to convert all of our LOTO tags to the correct candy stripe version on old tags for tags used to do servicing and maintnenace.

You should ensure we are not behind the schedule. This is a hard deadline by BNL.

2. We must all make sure that our buildings and offices are secure at the end of each day. We continually get reports from BNL Security that are sent to our Department Chair on doors that are unlocked, blocked open with wood, doors taped or roped open, etc. In addition, the CAS Watch finds up to 10 doors each week open when they make their rounds trying to help us reduce our unlocked and propped open doors. This reflects negatively on C-AD and reduces our credibility with BNL and DOE management. Please take the time to make sure when your work is done for the day to close and lock doors, especially at RHIC, which has the highest rate of doors found unsecured.
Remember that the main reason to keep doors locked is to prevent theft or damage to our equipment and materials.
For the month of August C-AD had 22 out of 56 doors found open after working hours by BNL Security.

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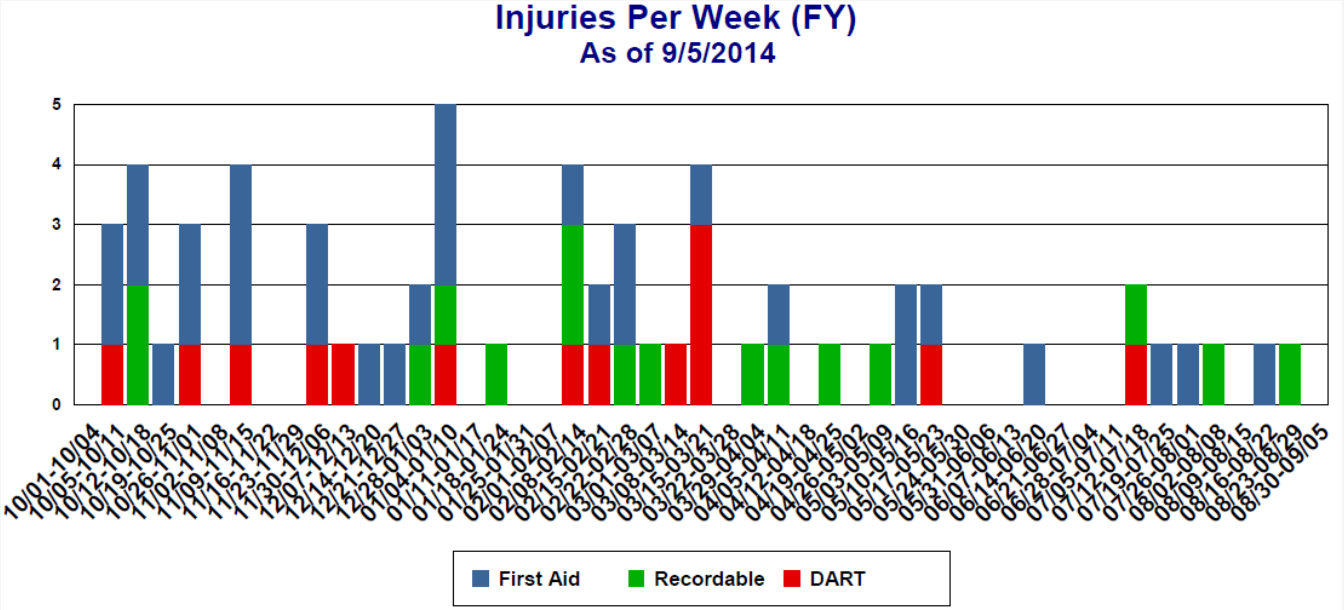
TECHNICAL SUPPORT 2014



Injury Status:

FY14 YTD: DART – 14, TRC – 30, First Aid – 31
FY13: DART – 16, TRC – 38, First Aid – 53
FY12: DART – 19, TRC – 36, First Aid – 69

FY14 Injury Listing:
https://intranet.bnl.gov/esh/shsd/seg/OccInj/BNLInjuries.aspx

Recent Injuries		
		None

From Last week

Recent Injuries		
8/29/14	Recordable	An employee struck his head against a stationary object in a basement. At the OMC, dermabond was used to close the wound. This is recordable and the worker returned to normal duties.

PHENIX

TECHNICAL SUPPORT 2014

Recent Events		
9/5/14	Non-Reportable	A scientist found a removable power tap arcing. There was no injury or exposure to electrical energy. Power tap was taken out of service. (Event Link)
9/4/14	Non-Reportable	A researcher from the Environment, Biology, Nuclear Science & Nonproliferation Directorate discovered contamination on their personal shoe. The researcher has been working with a radioactive substance in a hood in Building 901, i.e., approximately 70 mCi of C-11 (20-minute half-life). Upon exiting the area, the research found contamination while frisking their Personal Protective Equipment (PPE). When removing the PPE, the researcher then found contamination on their personal shoe using the frisker. This was followed by using the Personnel Contamination Monitor (PCM), as required by procedure. The researcher remained in the area until the Radiological Control Technician (RCT) arrived. Once the RCT arrived and removed the contaminated shoe, the RCT and researcher went through the PCM and cleared it. The personal shoe was contaminated with 1500 DPM C-11. The shoe was taken by the RCT and it is currently decaying and will be able to be returned to the researcher by the end of today. (Event Link)
8/28/14	SC-BNL	A laser worker in Building 820 may have been potentially exposed to a diffuse reflective infrared laser beam. The worker reported to the OMC for evaluation. There was no injury. The laser was placed in a safe condition and the laser room was secured until an investigation was completed and appropriate corrective actions implemented. The laser shutdown was done as a precaution and not for safety. No procedure was violated, and a preliminary exposure calculation indicates that laser goggles were not required. The calculation will be independently checked and procedure improvements will be made. UPDATE 9/4/14: The investigation was completed and the C-AD Department Chair has determined that the completed critique information will be reported as an SC-BNL Management Concern. (Event Link)
8/27/14	Non-Reportable	In the process of replacing blast gates to the HEPA exhaust filters serving the two fume hoods in Building, 801 Room 57A, it was noticed that the cardboard-framed/paper-based pre-filters were deteriorated (possibly due to working with acids within the hoods). No radiological work had been done in these two hoods since the last HEPA filter change on June 2013 and June 2014, respectively. (Event Link)
8/25/14	Non-Reportable	Over the course of the weekend (August 23-24, 2014), a picture frame displaying a reference chart (measuring approximately 2.5 feet by 3 feet) fell off of the wall in an office (Room 9), shattering the glass. There was no one in the office or immediate area when the incident took place. It was discovered by an employee on Monday morning (August 25, 2014). (Event Link)

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